REMARKS/ARGUMENTS

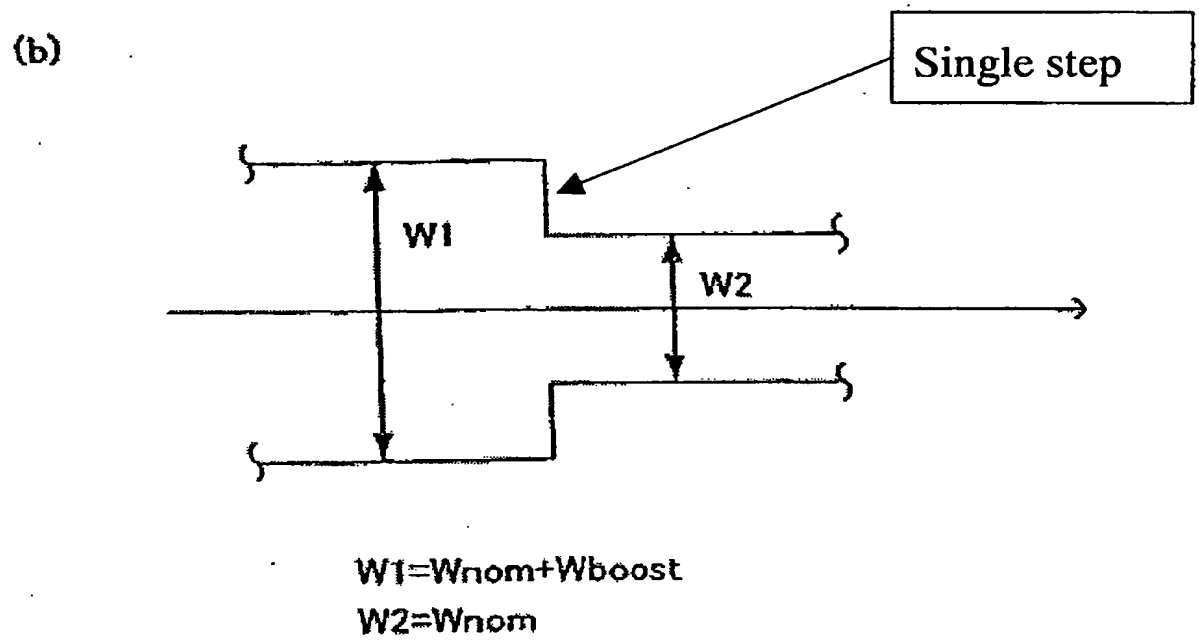
Claims 1, 2, 4-7, 11, 12, and 14-17 are pending. Claims 1, 2, 11, and 15 have been amended. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Claims 1, 2, 4, 5, 7, 11, 12, and 14-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Suzuki et al. (US 6,798,598).

Claim 1

Applicants respectfully submit that independent claim 1 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. does not teach or suggest decreasing the write current during the present write operation in multiple steps the number of which depends on the number of recording operation interruptions, wherein the write current is less than the given write current at the end of the write operation. As described in the specification at page 9, paragraph [0044], the write current may be increased/decreased in multiple steps depending on the number of write operation interruptions (multiple-step write current control).

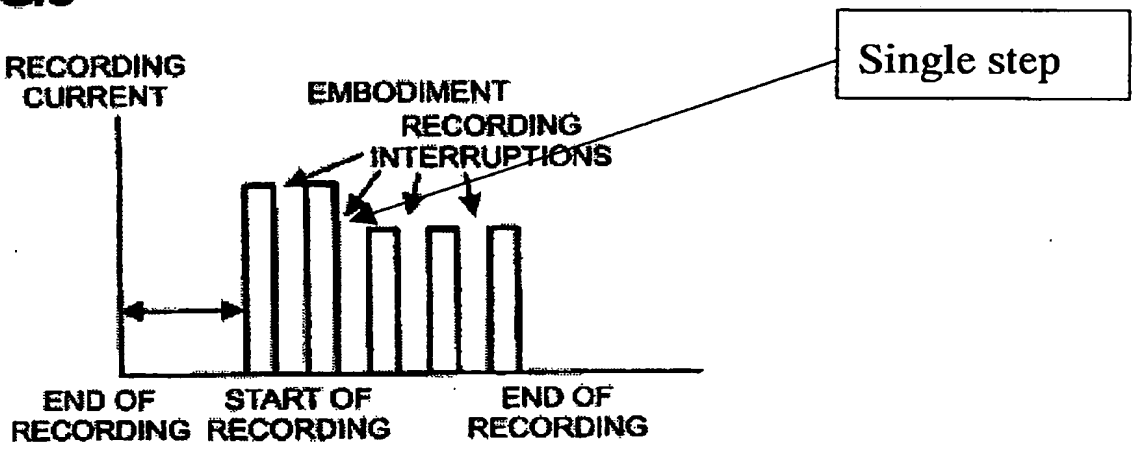
In Suzuki et al., the nominal current (W_{nom}) is decided by 5 bits and set current value of 32 levels from "00000" (0mA) to "11111" (60mA), and boost current (W_{boost}) is decided by 3 bits and set current value of 8 levels from "000" (0mA) to "111" (20mA) (col. 4, line 47 to col. 5, line 10). This refers to the variety of the combination of W_{nom} and W_{boost} ($W1 = W_{nom} + W_{boost}$). It has nothing to do with multiple-step write current control. Significantly, the W_{nom} value is decided as just one proper value selected from 32 levels, and the W_{boost} value is decided as just one proper value selected from 8 levels (see Fig. 4(a)). In control processing in the magnetic disk drive, Suzuki et al. uses only two selected values of W1 ($=W_{nom}$) and W2 ($=W_{nom} + W_{boost}$) shown in Fig. 4(b), and involves a single step. This is illustrated in Fig. 4(b) of Suzuki et al., as reproduced below. Suzuki et al. fails to teach or suggest increasing/decreasing in multiple steps depending on the number of write operation interruptions.



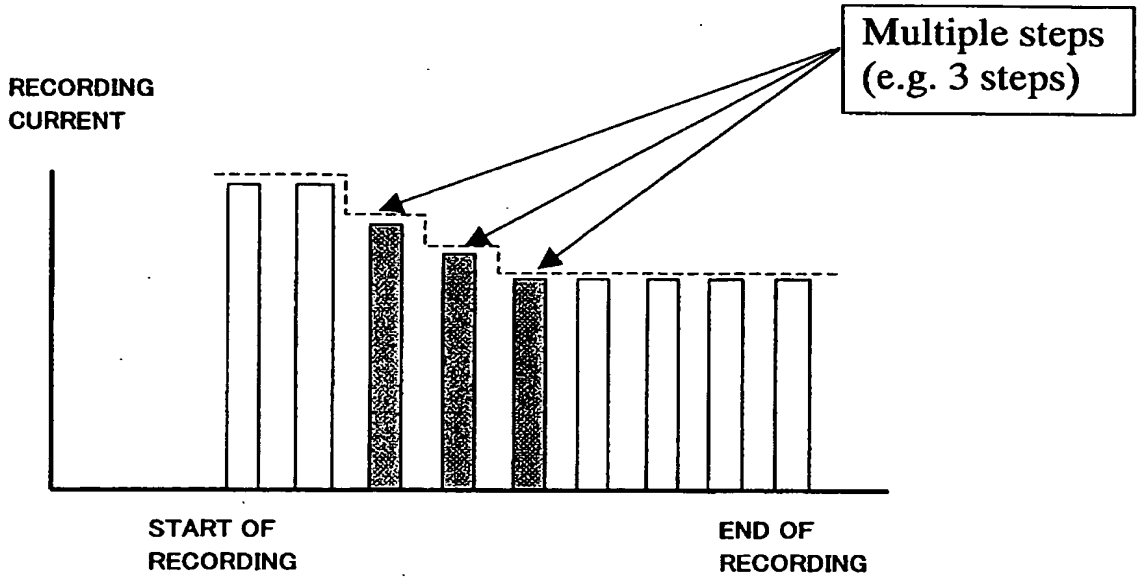
In contrast, the invention as recited in claim 1 is directed to multiple-step write current control in which the given write current is decreased step by step according to the number of recording operation interruptions. This allows the write current to be adjusted more precisely, and the magnetic disk drive having a plurality of magnetic heads to absorb the thermal expansion time differences among each of individual magnetic head more effectively.

For instance, Fig. 3 of the present application (as reproduced below) shows a "single step" scenario as described in paragraph [0043], where "the control is exercised in an embodiment in which the write current is decreased in a single step."

FIG.3



In a "multiple step" scenario, the "write current may be increased/decreased in multiple steps depending on the number of write operation (multiple-step write current control)," as described in paragraph [0044]. The Illustrative Figure below shows the multiple step case. Suzuki et al. does not teach or suggest the multiple step case as recited in claim 1.



For at least the foregoing reasons, independent claim 1 is novel and patentable over Suzuki et al.

Claims 2, 4, 5, and 7

Applicants respectfully assert that independent claim 2 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. does not disclose or suggest applying a second write current during a second later portion of the present write operation, wherein the first write current is higher than the second write current, the write current being decreased from the first write current to the second write current in multiple steps the number of which depends on the number of recording operation interruptions.

As discussed above, Suzuki et al. uses only two selected values of W1 and W2 shown in Fig. 4(b), and involves a single step. In contrast, the invention as recited in claim 2 is directed to multiple-step write current control in which the given write current is decreased step by step according to the number of recording operation interruptions.

For at least the foregoing reasons, independent claim 2 and claims 4, 5, and 7 depending therefrom are novel and patentable over Suzuki et al.

Claims 11, 12, and 14

Applicants respectfully contend that independent claim 11 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. fails to teach or suggest a write current control circuit that causes the write current to decrease in multiple steps, the number of which depends on the number of recording operation interruptions, during a write operation so that for an initial portion of the write operation, the write current being higher than the write current for an ending portion of the write operation.

As discussed above, Suzuki et al. uses only two selected values of W1 and W2 shown in Fig. 4(b), and involves a single step. In contrast, the invention as recited in claim 11 is directed to multiple-step write current control in which the given write current is decreased step by step according to the number of recording operation interruptions.

For at least the foregoing reasons, independent claim 11 and claims 12 and 14 depending therefrom are novel and patentable over Suzuki et al.

Claims 15-17

Applicants respectfully submit that independent claim 15 is novel and patentable over Suzuki et al. because, for instance, Suzuki et al. does not disclose or suggest means for setting the value of write current to be supplied to the coil for each of the specified segments and recording information while varying the write current in multiple steps, the number of which depends on the number of recording operation interruptions, during a writing sequence.

As discussed above, Suzuki et al. uses only two selected values of W1 and W2 shown in Fig. 4(b), and involves a single step. In contrast, the invention as recited in claim 15 is directed to multiple-step write current control in which the given write current is varied step by step according to the number of recording operation interruptions.

For at least the foregoing reasons, independent claim 15 and claims 16 and 17 depending therefrom are novel and patentable over Suzuki et al.

Claim 6

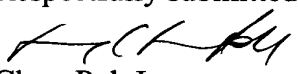
Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki et al. in view of Gaertner et al. (US 6,445,531). The Examiner cites Gaertner et al. for allegedly disclosing that the predetermined period of time after the start of writing is between several tens of microseconds and a millisecond. Gaertner et al., however, does not cure the deficiencies of claim 2 from which claim 6 depends, in that it also fails to disclose or suggest decreasing the write current during the present write operation in multiple steps the number of which depends on the number of recording operation interruptions, wherein the write current is less than the given write current at the end of the write operation. Therefore, claim 6 is patentable over Suzuki et al. and Gaertner et al.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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